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Cover: Corn plants rise through wheat stubble on a farm in Howard County, Md. The producer uses the no-till method of conservation tillage on all his cropland. (Photo by Tim McCabe.)

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Comments from the SCS Chief:

Commonsense Conservation

The Soil Conservation Service has a tremendous opportunity to build partnerships on the land over the next 4½ years. Our task is to ensure that farmers and ranchers complete the implementation of their conservation plans by the December 31, 1994, deadline in order to stay eligible for U.S. Department of Agriculture program benefits.

As we implement compliance plans, the quality of our work and a "commonsense" approach will do more than anything to encourage landowners to carry out sound conservation plans on their land.

Agricultural producers know that they must assume responsibility for prudent management of soil, water, irrigation systems, agrichemicals, and animal waste. They are looking for our help in sorting out the technology and making those management decisions. Our job is to help them find the most practical options—something workable for them.

Because farmers and ranchers build their operations around economics, the future of our program depends a great deal on how we build economic practicality into our technical guides. So, we've built economics and other disciplines into a new field office method called Conservation Effects for Decisionmaking. It focuses on the client as a decisionmaker, compares conservation alternatives in physical and economic terms, and provides as much or as little information as the client wants.

This way of handling economics and other factors is going to be a big help in adapting to the needs of all our clients. And that includes everyone...from those with extremely limited resources to those with highly sophisticated operations.

We're trying to focus on producers' economic and other needs in all of our program delivery. We help people define their resource problems and identify cost-effective solutions before we try to figure out how to implement the solution. That way, we're finding out what's really and truly needed to fix a problem—or to prevent it. We're not automatically assuming from the start that a particular program is the way to get the job done. That's what I mean by "commonsense."

More and more farmers and ranchers will be looking for an expert partner— like SCS and the conservation districts —to help them understand conservation issues and their responsibilities in this complex world.

Commonsense

Planning With Common Sense

WHEN A SALESPERSON tries to sell you a car, a television, or a refrigerator, you weigh advantages and disadvantages of the features, prices, and expected maintenance as you make your decision.

To do this, you want information. How much does it cost? Or you may have other concerns like car color or kitchen space.

A land user of a farm or ranch has similar thoughts when a Soil Conservation Service conservation planner talks about advantages and disadvantages of conservation management practices.

Can I get my needed per-acre yields or my per-head weight? the landowner asks. How much will it cost me now to prevent gullies? Can I amortize costs enough to balance with future benefits? How do I avoid contaminating my pond or my neighbor's pond?

Such a producer is likely very interested in "getting conservation on the land." But he or she may want to know what happens (called effects) to the farm after plowing on the contour, for instance.

SCS has adopted Conservation Effects for Decisionmaking (CED), which uses "effects" information during conservation planning. In CED:

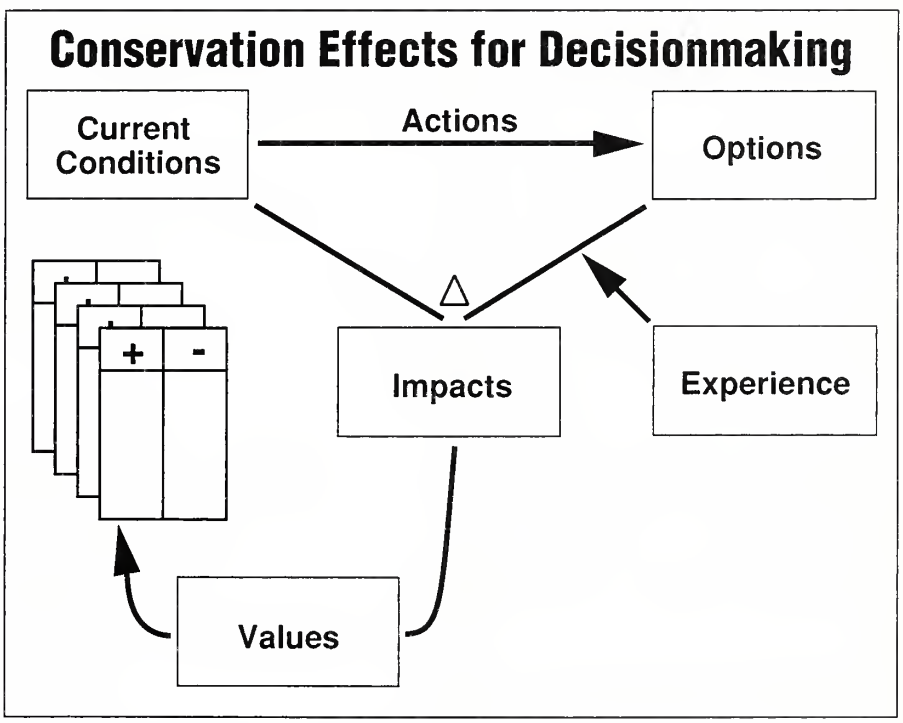
- "Effects" information is put into the Field Office Technical Guide (FOTG);
- Suggested alternatives are compared with what's happening now and are discussed with the land user; and,
- Suggested alternatives are chosen that make sense for the land user's operation.

Conservation planners use technical reference materials from the FOTG as they prepare suggestions, called alternatives, for the land user to consider.

To be useful, the FOTG must have factual, realistic data about applying conservation practices and their effects. SCS specialists will be working with field office conservation planners to improve and augment FOTG's for conservation planning.

CED planning consists of current conditions, actions, options, impacts, values, display, and levels of information. Experience "drives" the whole process.

Current conditions. For the producer's fields and pastures, the planner determines current condi-



tions—what the producer is doing right now and how it affects the resources.

Information on soils, crops, rotations, and farming/ranching operations helps the planner examine such indicators as erosion rates, water quality conditions, crop yields, grazing rates, plant health, and soil tilth.

Actions. Once the planner has learned the land user's needs, problems, and concerns, the planner decides on conservation practices to suggest.

"Actions" are what the land user will do, such as using a ridge-till planter or grading terraces into a field. The planner includes actions in what is often called a conservation treatment alternative—the planner's suggestion of how to use conservation practices to solve the land user's needs, problems, and concerns.

In preparing proposed land-user actions, the planner draws upon the FOTG as well as previous experience on how to treat problems and with what treatments.

The planner should build at least two suggested conservation treatment alternatives that are suitable for the land user's operation.

Options. The planner presents the different suggestions or alternatives to the land user. Each alternative includes the effects expected for each land-user action. Usually there are a number of actions.

Now the land user or producer is a decisionmaker with options to

Apply A Conservation Option?: Pluses and Minuses

Current condition: continuous corn; conventional cropping; residue management; up-and-downhill tillage.
Conservation option: continuous corn; conservation cropping sequence; conservation tillage (30% cover ridge-till); contouring; grassed waterway.

Display of Impacts

Pluses	Minuses
Reduced sheet and rill erosion, 14 tons/acre/year	Added equipment, $21,000.
Water conservation.	Increased herbicide use, 1 lb Atrazine/acre/year.
No ephemeral gullies.	Increased corn harvest cost for 20-bushel/acre-yield increase.
Sustained/improved corn yield, 20 bushels/acre	Slightly increased potential for groundwater pollution.
Reduced equipment use (fewer times over field)	Higher management level needed.
Reduced labor, 1.1 hours/acre.	Install waterway and outlet, $1,100.
Reduced fuel, 4 gallons/acre.	Lost corn production in waterway, 100 bushels/year.
Extended equipment life.	Harvest cost of waterway hay (4 tons/year).
Increased hay production (from waterway), 4 tons/year.	Waterway and outlet repairs, 10% of installation cost/year.
Reduced offsite sedimentation.	
50% cost-sharing for waterway.	
More labor available in May.	

Refined Display Of Impacts

Pluses	Minuses
Reduced sheet and rill erosion, 14 tons/acre/year.	Added equipment investment, $20/acre/year.
Water conservation.	Increased herbicide use, $12/acre/year.
No ephemeral gullies	Increased corn harvest cost, $5/acre/year.
Improved corn yield, $40.20/acre/year.	Slightly increased potential for groundwater pollution.
Reduced equipment cost, $2/acre/year.	Higher management level needed.
Reduced labor cost, $5.50/acre	Install waterway and outlet, $3.40/acre/year.
Reduced fuel cost, $4/acre/year.	Lost corn production in waterway, $5/acre/year.
Extended equipment life.	Harvest cost of waterway hay, $5/acre/year.
Increased hay production, $6/acre/year.	Waterway and outlet repairs, $2.75/acre/year.
Reduced offsite sedimentation.	
50% cost-sharing for waterway.	
More labor available in May.	

...SCS wants to provide the decisionmaker with reliable information he or she needs to make an informed decision...

consider: Do I choose alternative A with no-till, alternative B with ridge-till, or continue with current conditions using a conventional planter?

Data and reference material from the FOTG will be important to determine conservation effects of the proposed actions and how effects satisfy the decisionmaker's needs, problems, and concerns.

Impacts help the land user decide which option to choose. The differences between current conditions and conditions resulting from alternative A, for example, constitute impacts. Impacts can be expressed in either narrative or quantitative terms.

For example: Sheet and rill erosion can be reduced 16 tons per acre. Conservation treatments can stop this headcut. Water quality can be improved.

Values. The farmer or rancher as a decisionmaker uses his or her values to judge impacts as positive or negative (good or bad, gains or losses). Typically, the decisionmaker will be interested in choosing the option where the positive impacts more decidedly outweigh the negative impacts, be it one of the suggested alternatives or the current conditions.

Values reflect a decisionmaker's ideals, beliefs, customs, and concerns. Values help answer questions, such as: How important is each positive or negative impact? How important are operation costs? How important are time constraints? How important are other impacts?

Display. After incorporating the decisionmaker's value judgments, the planner sets up the narrative and quantitative impacts in a plus/minus display for easier viewing and consideration.

Impacts need to include information to assist the decisionmaker in making tradeoffs, such as comparing the added $2-per-acre cost of a system with how the system will benefit the quality of the farm pond.

Sometimes the decisionmaker may need additional information before "feeling comfortable" in choosing one of the suggested alternatives.

What are installation and maintenance costs for this particular conservation practice? How many tons per acre will soil erosion be reduced? Will my corn harvest improve, and how much?

Levels of information enable the conservation planner to provide information, in the appropriate amount of detail, that helps the producer make a decision. Different people may want different amounts or types of information, so a generalized set of facts about conservation practices and systems will not work.

As more or different information is needed, additional information tools and sources may be required. A model may be necessary. Information and assistance from an agronomist, economist, or a soils specialist may be needed. Perhaps expertise from an Extension specialist may help with some questions and concerns.

In essence, SCS wants to provide the decisionmaker with reliable information he or she needs to make an informed decision—nothing more and nothing less.

Experience helps the planner look at the resources, determine current conditions, decide on management practices and land-user actions to suggest, get needed information, envision effects of land-user actions, and identify expected impacts.

A planner's insights help the decisionmaker choose the best option for his or her situation.

Many SCS conservation planners are already carrying out CED, albeit instinctively, through already-gained experience in dealing with land-user needs, problems, and concerns. SCS wants all its planners to become equally able and caring.

FOTG's will be updated and improved to include conservation effects. Conservation planners will receive training in CED. And SCS national planning and training policies will support conservation effects as an integral part of planning and decisionmaking.

The "bottom line" is help the producer make an informed choice, a choice that makes sense for the operation. With an informed choice, a reasonable and effective conservation plan can be applied and carried out over time.

John Stierna, national economist, SCS, Washington, D.C., and **Paul G. DuMont,** associate editor, *Soil & Water Conservation News,* SCS, Washington, D.C.

Case studies have been recorded in all U.S. regions and for various operation levels of farm/ranch management.

Case Studies Benefit Conservation

THE SOIL Conservation Service uses conservation practice results that a producer experiences to project what may happen when the same practice is applied to a different property with similar resource characteristics. Such results may be captured in case studies.

In a case study, SCS personnel systematically record resource settings and conditions, "before" management practices, "after" practices, and differences experienced.

Sometimes case studies require advanced SCS planning and need careful monitoring throughout, as in field trials. But most studies evolve when cooperators record before and after conditions, differences, and other changes, and share this with SCS conservation planners during plan followup visits (planning element 10).

Case studies have been recorded in all U.S. regions and for various operation levels of farm/ranch management. Results are not universally applicable but are frequently comparable.

The real value of the case study concept is to show how easy it is for SCS field staffs to record effects they see after conservation has been applied. SCS'ers can use this "local" data when telling land users about conservation practices and their effects.

Many planners carry in their heads the gists of such producer experiences—whether they are actual case study comparisons or just what happened when producers applied specific practices.

With information on effects becoming such a significant conservation planning tool in SCS field operations, actual producer experiences will be very helpful. They can be incorporated into Section V of the Field Office Technical Guide, such as in an automated data base on conservation effects that can be used in planning.

John Stierna, national economist, SCS, Washington, D.C., and **Paul G. DuMont,** associate editor, *Soil & Water Conservation News,* SCS, Washington, D.C.

New York Study: No-Till Corn

CARL DENNIS is a dairy farmer in Pompey, N.Y., just southeast of Syracuse. He milks 55 cows and sells oats, straw, high-moisture corn, and hay for horses.

Dennis became interested in no-till in the late 1960's. During the mid-1970's, he also worked as an agricultural consultant and spoke at farmer meetings across New York State and in New England on the "do's and don'ts" and benefits of no-till planting.

The case study with Dennis compares conventional planting and management of corn with no-till planting and conservation management in a corn-hay rotation. Dennis harvests for high-moisture corn, or he chops the plants for silage.

Soil in the 10.3-acre field consists of Honeoye silt loam, gently sloping and sloping. It is deep and well-drained. Because the field is narrow and sloping, it is only practical to farm it "up-and-downhill."

The table lists "before" and "after" conditions and impacts. Most information Dennis provided is specific to the case study, but some of his thoughts reflect general observations from 15 years of no-till farming experience.

Paul Webb, district conservationist, SCS, Syracuse, N.Y., and **Paul G. DuMont,** associate editor, *Soil & Water Conservation News,* SCS, Washington, D.C.

Carl Dennis, a farmer in Pompey, N.Y., inspects corn residue. No-till planting is used in this field. (SCS photo.)

The case study...compares conventional planting and management of corn with no-till planting and conservation management in a corn-hay rotation.

New York Case Study: Experiences With No-Till Corn Planting

Before (or current) condition	After (or option) condition	Impact
Corn 3, Hay 7	Corn 3, Hay 7	No impact
Soil loss--7.1 tons/acre/year	Soil loss--4.1 tons/acre/year	Reduced loss--3 tons/acre/year
Soil loss caused offsite damage	No-till kept soil on field	No-till eliminated runoff damage to newly seeded fields or haylots
Time to plow, pick rock, fit field, spray, plant in sod: 33-37 hours	Time to spray, plant: 9-11 hours	22-28 hours saved; use for dairy management, for leisure time
Time to plow, pick rock, fit field, spray, plant in corn: 25-27 hours	Time to spray, plant: 7 hours	18-20 hours saved; use for dairy management, for leisure time
Fertilizer--400 lb/acre 15-15-15, 8-10 tons/acre manure	Fertilizer--400 lb/acre 15-15-15, 8-10 tons/acre manure	No impact
Herbicides on sod--4 quarts Atrazine	Herbicides on sod--1 quart Paraquat + Surfactant, 5 lb Atrazine	Higher costs; more spray trips; higher level of chemical knowledge required
Herbicides on corn after corn--2 1/2 to 3 quarts Atrazine, 2 quarts Lasso	Herbicides on corn after corn--2 1/2 to 3 quarts Atrazine	No impact
More flexibility in timing	Time of sprays more critical	Better time management needed; optimum weed control difficult with custom spraying
Field plowed and fitted with 90 hp diesel tractor	Planting, spraying with 80 hp diesel tractor	Cheaper tractor to buy, run, and maintain
Large tractor needed for tillage	Large tractor still needed--occasional plowing, blowers, etc.	Equipment not worked as hard; it lasts longer
More tractor fuel used	Less tractor fuel used	Dollar savings
Conventional or no-till planter would work	No-till planter needed	Higher cost; but more planting options: convent'l, reduced, no-till
Corn yield--100-120 bushels/acre	Corn yield--no noticeable difference	No impact
Corn shows stress signs during drought	Corn holds up longer before showing stress signs	May offset decreased yield due to seed mortality
Tractor can get stuck in fall; field is left rough in "wet" fall	Better traction in fall; leaves fewer ruts	Time savings in fall (not stuck); time savings in spring (preparing field)
Some soil compacting noted	Reduced soil compacting	Better root development

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"A need is not established until the farmer expresses a desire to do something about the problem."

New Training Piloted

COMMONSENSE conservation planning begins with a well-trained conservation team. The Soil Conservation Service, in a continuing effort to find quality training programs designed for the challenges facing conservationists today, piloted a new training program in the State of Virginia.

SCS presented the new program, coined Need Satisfaction Conservation Planning, to all conservationists in the State over a period of several months. The training teaches basic communication skills necessary to be successful in conservation planning.

Such training also ties in well with the emphasis-on-the-customer Total Quality Management philosophy now being introduced in the agency.

"This training program makes sense because it first separates opportunity from need," said Roger Montague, area conservationist in Culpepper, Va. Montague has been one of the leaders in teaching and evaluating the program in Virginia.

"When SCS conservationists are in the field and see a gully on a farmer's property," Montague continued, "they see an *opportunity* to solve a problem. However, an opportunity is not the same as a *need.*

"A need is not established until the farmer expresses a desire to do something about the problem. It's only after this need is expressed that we are in a position to get the commitment to solve the problem. Understanding this basic difference between opportunities and needs has a huge impact on our success."

Montague said what the training does is empower a conservationist to identify customer needs, to understand them, and to offer more acceptable solutions to solve them.

"The customer's needs become the focal point of the conservation planning process," he said.

To uncover customer needs, conservationists learn the skill of asking questions or **probing**. Open probes get the customer to talk about his or her needs. Closed probes are used to guide the customer toward a particular issue or to get a yes or no answer to a particular question.

The second skill taught in the training is **supporting**. This is a valuable skill because it shows the customer that the conservationist has been listening.

"The conservationist 'feeds back' what needs the customer expressed—as the conservationist understood them," Montague said. "This builds rapport and empathy with the customer, and the conservationist is assured of understanding the customer's needs even further."

According to Montague, once the customer's needs are really understood, the conservationist can better "recommend" solutions to satisfy these needs. Now the conservationist can present benefits of conservation practices or resource management systems to the customer. This approach is different from stating outright what the customer *should* do.

The third skill learned in the training program is **closing**.

"Closing doesn't mean you are finished," Montague said. "It means you get a commitment from the customer to do something. It might be as simple as scheduling another appointment or agreeing to participate in a group-planning session. On the other hand, it may be a firm commitment to schedule work to be done. It is important to learn how to close because, when it is done correctly, it is the one thing that leaves the customer with a sense of ownership of the solution."

In addition to learning basic skills of probing, supporting, and closing, conservationists also learn how to deal with customer attitudes during the planning process. An added bonus in the program is the segment that teaches area conservationists the essential coaching skills that help them become more effective supervisors.

"One of the area conservationists in Virginia told me that the coaching portion was the first training he'd received in his career that really showed him how to do his job," Montague said.

"The pilot training program in Virginia was very successful. Need Satisfaction Conservation Planning is now part of the core training for all soil conservationists and technicians in the State. We figure we owe it to the employees in Virginia to help them be as successful as they can be," concluded Montague.

Kathleen Diehl, contributing editor, *Soil & Water Conservation News,* SCS, Washington, D.C.

Conservation tillage is the cornerstone in conservation plans of most Iowa farmers.

Conservation Tillage Is Worth Using

Conservation tillage controls wind erosion economically in corn and soybean country in Iowa. (Photo by Lynn Betts.)

CONSERVATION TILLAGE is not as elaborate nor as permanent as many other conservation practices for controlling soil erosion by wind and water. But none are more economical.

This is how thousands of Iowa farmers feel who use conservation tillage year after year on corn and soybean land. Proof of this is that they have led the Nation in acres of conservation tillage for many years.

Conservation tillage is the cornerstone in conservation plans of most Iowa farmers. The practice controls soil erosion by wind and, when used in combination with other practices, reduces soil erosion by water to levels acceptable for the conservation provisions of the 1985 Food Security Act.

Over the last 4 years, Iowa farmers applied conservation tillage on an average of 10 million acres. Much of that acreage is in north-central Iowa, where farmers have both wind and water erosive forces to contend with.

Four prime cropland counties in that region—Wright, Webster, Pocahontas, and Greene—each topped 100,000 acres of soybeans in conservation tillage during 1988. Three counties in that region—Boone, Pocahontas, and Kossuth—each topped 100,000 acres of corn in conservation tillage.

"The minimum of crop residue that qualifies as conservation tillage—usually a 30-percent ground cover—will control wind erosion in Iowa," said State Conservationist J. Michael Nethery. "Our farmers are aware of more permanent practices such as field windbreaks and grass strips, but they choose conservation tillage because it's economical, it will do the job, and they can remain flexible with it."

Lynn Betts, public affairs specialist, SCS, Des Moines, Iowa

...because of Operation Soil Facelift on the Bragg farm, many other farmers in the area were swayed to use applicable practices on their own farms.

Conservation Practices Keep Farms Productive

AN INNOVATIVE demonstration program started back in 1983 has provided farmers in 16 north Alabama counties with an awareness of the area's excessive soil erosion losses, how erosion losses affect their productivity, and how to solve severe erosion problems.

Operation Soil Facelift was centered on the 420-acre Allen Bragg farm near Huntsville, Ala. Ditches on the farm were knee deep, and Bragg had problems driving machinery over them. Crop yields were declining. His average soil loss by erosion was 24 tons per acre. Such continued erosion, according to Soil Conservation Service studies, would reduce crop yields by 20 percent every 10 years if allowed to continue.

Bragg initiated a complete system of residue management to control sheet and rill erosion, and structural measures to handle excess runoff and prevent gully erosion were installed. Terraces with underground pipe outlets, conservation tillage, crop rotations, and crop residue management are the main practices that reduced Bragg's erosion levels from 24 tons per acre to the tolerance level of 3 tons per acre on the cropland.

"We get to farm 100 percent of the farm, and the system should last a long time," he said. "Profit margins are pretty slim. Without the system, a 10-percent yield reduction because of erosion could wipe the profit out."

Sammy Harris, SCS district conservationist in Madison County, said that because of Operation Soil Facelift on the Bragg farm, many other farmers in the area were swayed to use applicable practices on their farms.

"The Bragg 'facelift' farm demonstrated and set the stage for a large increase in requests for terraces with pipe outlets and sediment basins and buffer strips," Harris said. "Many farms were losing 20 to 40 tons of soil per acre each year. Now they have cost-effective systems which have brought the erosion rate down to tolerable levels."

One farmer impressed by the demonstration was Walter Shaw in Limestone County. He installed a complete water control system on his 280-acre farm that includes diversions, tile outlets, grassed waterways, sediment basins, and sod-based rotations. The most effective improvements, according to Shaw, are 70-foot-wide grass contour strips across his once gullied land.

"We studied the landscape and our options and determined that putting in these rotated grass strips would be the most cost-effective method of solving some of our erosion problems," Shaw said.

Operation Soil Facelift was coordinated by the Alabama Rural Development Council. Ernest Todd, SCS State conservationist, has nothing but praise for the awareness produced by the program.

Morris S. Gillespie, public affairs specialist, SCS, Auburn, Ala.

Walter Shaw (center), a farmer from Limestone County, Ala., visits with Mark Swafford (right), SCS district conservationist, and Mike Roden, SCS resource conservation and development coordinator. Shaw implemented fescue grass strips as part of his conservation management system.

Cost-sharing...paid nearly 80 percent of the needed diversions, drop structures, and critical area seeding prescribed in the conservation plan...

Being Sensible With Hogs In Maryland

A DIFFERENT KIND of "commonsense" conservation planning took place in Anne Arundel County, Md., in 1988, according to the Soil Conservation Service's Joseph Haamid, a soil conservationist in Annapolis.

On the Blake Green farm was evidence of agricultural pollution. In years past, hogs using steeply sloping pastureland had caused severe erosion onsite and sediment deposition offsite.

The unprotected, highly erodible, fine sandy loam soil was entering Bacon Ridge Branch, a tributary of the Chesapeake Bay. And the Maryland Department of the Environment (MDE) was duly concerned.

The hogs are long gone now. Green had retired as a farmer and has recently been hospitalized. Haamid said that correcting severe erosion on Green's land seemed like a waste of money...money that would be hard to come by for the retired farmer.

But untreated erosive conditions remained, and sediment deposition continued to foul the tributaries. Agricultural sediment runoff is considered a pollutant to waters of the State, according to Maryland law. MDE felt Green should be responsible for fixing the problem.

Green was concerned about the environment and wanted to do what he could...within his means. So Haamid looked into other funding sources and subsequently learned about the Maryland Department of Agriculture's (MDA) Cost-Share Program. He encouraged Green to apply.

Cost-sharing was approved. MDA paid nearly 80 percent of the needed diversions, drop structures, and critical area seeding prescribed in the conservation plan that Haamid prepared.

Green's interest and cooperation, a "commonsense" SCS approach to conservation planning, and MDA's financial support combined to complete a highly successful restoration of severely damaged pastureland and silted downstream channels, Haamid reported.

And agricultural pollution was stopped in this little corner of Anne Arundel County.

James W. Wist, district conservationist, SCS, Annapolis, Md.

Joseph Haamid (left), SCS soil conservationist in Anne Arundel Co., Md., discusses conservation plan with Mr. and Mrs. Blake Green. (SCS photo.)

"We had to come up with a way to keep our farmers competitive."

Pasture Revival Could Aid Farmers

On New York's hilly slopes, paddocks (separate smaller pastures) dot the landscape as part of a pasture management program.

GRASSLAND AND pastureland in the State of New York are experiencing a revival. The Soil Conservation Service has developed plans for over 400 farmers who are adopting pasture management systems for both the dairy and beef cattle industries.

"Farmers are responding to Cornell's Hillside Pasture Project study—it has credibility for them," said Darrell Emmick, SCS State grassland specialist. "In a way, it's like reinventing the wheel—this is the thing our grandfathers did."

Research conclusions of the Hillside Pasture Project show a correlation between a highly nutritive pasture diet (20 to 30 percent protein content, compared with 8 percent for corn silage) and increased milk production for dairy cattle and weight gain for beef cattle.

"Our grandfathers knew that pasture was the cheapest homegrown feed available for livestock," Emmick continued. "It still is—we just forgot! But, when technology is changing as rapidly as it is now, it's important to reinvent the wheel. We have never understood as much about pasture and pasture management as we do now."

Agriculture is the largest industry in New York. It has been going through some challenging times: its survival has been threatened with galloping development; erosion is washing cropland downstream at 8 to 10 tons per acre per year; and acres of underutilized pastureland have been reverting back into fields of brush and tree species.

Yet, New York is a State with a reliable rainfall. The soil, though thin, is fertile; and the pasturelands are hilly and perfect for cattle and sheep. The climate is conducive to growing the highest quality forage.

"We had to come up with a way to keep our farmers competitive," said John Dickerson, plant materials specialist for the States of New York, Maine, Vermont, and New Hampshire. "If they can't be kept economically competitive, the developers will move in immediately. With irrigated agriculture in trouble, where will we grow so much of the food that is needed in the northeastern part of the United States?

"But it's more than that. There is this whole quality of life issue. Who really wants to live in a place where there is nothing but solid houses and asphalt? Maintaining agriculture is very important to New York."

SCS became involved with the Hillside Pasture Project at Cornell University in 1983 when the Agency hired Darrell L. Emmick, a master's candidate with a degree in ecology from Syracuse University. Emmick had been involved, through his master's research, as project manager for the Hillside Pasture Project at Cornell. When the university didn't have the funds to retain him, Paul Dodd, State conservationist for New York, loaned Emmick back to Cor-

"...in managed or rotational grazing systems where livestock are tightly controlled, these vegetative impacts are dramatically reduced and the forage as well as the livestock can thrive."

nell to continue as project manager, but now representing SCS.

Cornell began the Hillside Pasture Research and Demonstration Project in 1978 at its Teaching and Research Center at Harford, N.Y. The pastureland there had been abandoned for 25 years and was perfect for the two project objectives:

- To evaluate the potential for using the approximately 3 million acres of underutilized and abandoned hillside farmland in New York as grasslands for the production of meat and milk; and
- To reduce the cost of production and improve net income on beef and dairy farms in the State by more effective use of pasture.

The initial phases of the project were funded by the Cornell Beef Producers Research and Extension Fund and USDA Small Farms Grant and Hatch Project (#473) Funds.

With SCS and Cornell working together, the project continued its 10-year study and produced a summary report in 1989 covering the years from 1978 to 1988. Two findings in the report fall into the "reinvented wheel" category:

- In 1935, New York's dairy herds received 75 percent of their nutrients from pasture during a grazing season of 5 months. By 1978, only 21 percent of the nutrients came from pasture. As more livestock was put into a feedlot environment, the pastureland was abandoned.
- Many farmers were just barely able to grow what they needed to break even, which in New York State is about 14 tons of corn silage per acre. Growing corn was also labor-, fuel-, and machinery-intensive.

The Hillside Pasture Project staff took abandoned pastureland, divided it into paddocks, or separate pastures, and initiated several different grazing systems on it: intensively rotated pasture, moderately rotated pasture, and continuous grazing on improved and unimproved pasture.

In short, the staff compared different types of pasture renovation practices using different grasses and testing such variables as the influence of lime on forage yields. They measured the nutritional value of everything. They weighed the animals. They measured dry matter yields of the forage. They measured the forage intake of nursing calves...and much, much more.

The average cost of fencing fell between $1,000 and $2,000 for 20 to 40 paddocks for dairy farms and 10 to 20 paddocks for beef farms. This cost, however, was offset in the first months by a reduced need for purchased feed.

"With my background in ecology, I look at livestock and pasture plants as a classical predator-prey relationship," said Emmick. "Livestock, when left to their own devices, are nasty, destructive, pasture predators; and the grass is the unsuspecting, defenseless prey that can neither run nor hide. In an unmanaged situation, the grazing animal can become its own worst enemy by completely destroying its feed supply through overgrazing, trampling, and fouling with manure.

"However, in managed or rotational grazing systems where livestock are tightly controlled, these vegetative impacts are dramatically reduced and the forage as well as the livestock can thrive."

Preliminary research results indicated an average savings of $100 per cow; typical benefits are over $5,000 per farm.

"In further defining this savings, those figures are low," Dickerson said. "We think it will be closer to a $200 savings per cow. One farmer, for example, told me that with the managed pasture he didn't need to plant as much corn, or alfalfa, which saved him fertilizer, fuel, labor, and maintenance on equipment. He said the cows were healthier on the pasture so he saved in veterinarian bills too. He didn't have to haul as much manure around so he experienced another savings in fuel, labor, and maintenance. He also experienced improved hay quality and quantity and higher carrying capacity. None of these types of variables were factored into the project summary."

One of the most interesting observations of the project, according to Dickerson, was the weight gain for crossbred (predominantly Angus bred to Simmental sires) beef calves using rotational grazing on improved pasture. For heifers and steers, it averaged 2.76 pounds per day!

"I think the high nutritive value of a managed pasture—once thought to be pretty worthless pieces of land—will keep this State at the top of the charts agriculturally," Dickerson said. "This is what it's all about, isn't it?"

Kathleen Diehl, contributing editor, *Soil & Water Conservation News*, SCS, Washington, D.C.

Conservation

Yellow Poplar Creates New Opportunities

IS THERE POTENTIAL in using low-grade yellow poplar as building construction lumber? An open house held during February 1990 in St. Charles, Md., demonstrated there is. The Southern Maryland Resource Conservation and Development (RC&D) Board cooperated with the Maryland Forest, Park and Wildlife Service in this demonstration.

The open house attracted representatives from all areas of the lumber industry. What they saw was the potential of an abundant local natural resource to contribute significant income to the economy of southern Maryland.

Before the open house was over, the RC&D Board agreed to establish a Yellow Poplar Task Force under the RC&D forestry committee. Members included homebuilders, lumber mill representatives, woodland landowners, lumber retailers, the State utilization forester from the Maryland Forest, Park and Wildlife Service, and the RC&D coordinator.

The task force will determine the cost needed for commercial production of yellow poplar. Also, it has proposed establishing a business cooperative or a corporation with local investors and is now working to bring this about.

The project started in 1985 when the RC&D Board obtained a grant to demonstrate the potential of yellow poplar as building construction lumber. Local trees were harvested, sawn into standard sizes, kiln dried, and graded. Builders used the poplar lumber to frame the interior walls of the home in St. Charles.

Yellow poplar is a unique construction material because it does not split or warp. Also, it is easy to nail and is better or equal to the spruce-pine-fir and hemlock-fir species groups. It was used in many early American homes and was recognized as a suitable substitute for spruce in aircraft construction during and after World War II. Yellow poplar meets all building code requirements when properly manufactured and grade stamped by a certified grader.

Bill Boyer, RC&D coordinator, La Plata, Md. and **Sarah Taylor,** writer/editor intern, SCS, Washington, D.C.

Graders inspect yellow poplar boards for suitability as a construction material. If the underused lumber is harvested, it could be an economic boon to the lumber industry in Maryland.

A partially completed house constructed of yellow poplar was the site of an "open" house in St. Charles, Md. The meeting attracted many representatives of the forestry, lumber, and construction industry in the State.

In Action

Innovative Recycling That Works

A compost turner lifts, turns, and airs the compost. It gives the compost an even mixture. (Photo by Dawn Genes.)

WHAT DO YOU GET when you mix four parts sawdust and one part fish? An excellent soil amendment or growth medium, according to Time and Tide Resource Conservation and Development (RC&D) area officials in Waldoboro, Maine.

The Knox-Lincoln Soil and Water Conservation District in mid-coast Maine initiated a project that would use fish byproducts and asked the RC&D to organize it. The RC&D arranged for a large-scale composting demonstration that began in 1987. The results have had a significant impact on State and local waste management.

To carry out the project, 26 private and public organizations, agencies, and municipalities formed the Mid-Coast Compost Consortium. "The project could never have happened without the Consortium's efforts," said Archie Gaul, former chairperson of the Time and Tide Council.

Prior to this composting, there were four ways to dispose of fish byproducts: take them to rendering plants, dump them into the ocean, pile them in landfills, or spread them on the land. All faced strong opposition from the community.

The Consortium composted 500 tons of fishery byproducts and sawdust in August 1987. Temperature, oxygen, and nutrient monitoring content were crucial to the project's success. The compost can be used for topsoil, potting soil, or other soil amendments. Concerns about odor, flies, and leaching were unfounded.

This project dramatically affected State regulation of certain types of materials in Maine. New regulations now allow leaves, brush, and other vegetative wastes to be composted under the "Permit by Rule" process.

Project results were published in an economic feasibility study, "Composting Fish By-Products: A Feasibility Study," that details compost production costs for a variety of sizes of operation.

As a result there is at least one commercial composting operation to date, a private fishery that worked with the Consortium throughout the project and began composting its dogfish gurry in July 1989.

A market survey determined that the soil amendment would be marketable and profitable. Farmers and other entrepreneurs are recognizing that composting is a profitable way to diversify their businesses, utilize fishery wastes, and develop a product in great demand.

Nearly 250 people attended an all-day composting conference arranged by the RC&D and 17 other organizations and collected as much information as they could about composting. Portions of the conference were videotaped; copies are available.

Agricultural enterprises are the most likely group to produce a compost product since the equipment, area, and raw materials are readily available onfarm. Local conservation districts may want to consider the further promotion and development of composting technology.

Dawn Genes, former coordinator, Time and Tide RC&D Area; now environmental specialist for North Carolina and Virginia, SCS, Raleigh, N.C.

NEWS Briefs

Demonstration Projects To Be Established

This year, water quality demonstration projects will be established in eight States by the U.S. Department of Agriculture.

The projects are:

- Sacramento Valley Demonstration Project in California;
- Lake Manatee Watershed Demonstration Project in Florida;
- Monocacy River Watershed Demonstration Project in Maryland;
- Anoka Sand Plain Demonstration Project in Minnesota;
- Mid-Nebraska Water Quality Demonstration Project in Nebraska;
- Herrings Marsh Run Demonstration Project in North Carolina;
- Seco Creek Demonstration Project in Texas; and
- East River Watershed Demonstration Project in Wisconsin.

The projects will also demonstrate farmers' willingness to adopt newly developed production practices and systems that more effectively manage nutrients and pesticides.

Five USDA agencies have committed $3.3 million to the projects. They are the Agricultural Stabilization and Conservation Service, the Economic Research Service, the Extension Service, the Forest Service, and the Soil Conservation Service.

The Agricultural Research Service and the Cooperative State Research Service will provide research assistance to support the development and application of new technology to meet water quality needs.

Joint leadership for the onfarm demonstration projects will be provided by the Soil Conservation Service and the Extension Service (ES). ES will provide education and information regarding installation procedures and effects, and SCS will provide $1.1 million in technical assistance for selecting and installing the demonstration conservation practices.

Sixteen more demonstration projects are being planned as part of USDA's accelerated water quality effort for the 1990's.

Workshops Cover Planning Manual and Tech Guide

The Soil Conservation Service recently held four regional workshops to discuss planning and technical subjects that SCS is responsible for under the Food Security Act of 1985 (FSA).

Also discussed were revisions of two major SCS manuals, the National Planning Manual and the Field Office Technical Guide (FOTG). Changes in SCS policy and procedures for both manuals were presented. This is the first time both manuals were revised concurrently.

"Revising the National Planning Manual and the Field Office Technical Guide concurrently should provide stronger coordination between SCS program and technical staffs at all levels of SCS and make it easier to carry out these policies consistently," said Karl Reinhardt, SCS conservation planning leader at National Headquarters in Washington, D.C.

The planning manual has been under revision for several years. A draft was distributed at the workshops for comments.

The planning manual is used nationwide for policy and procedures for conservation planning and now includes policy and procedures for all types of resource planning. The FOTG is adapted to each county and provides technical criteria for planning.

Each State sent its SCS State program leader for FSA and its conservation engineer, soil scientist, resource conservationist, and biologist to one of the workshops. State representatives from the Agricultural Stabilization and Conservation Service (ASCS) were invited to the FSA discussions.

Workshop participants also discussed materials on conservation effects and received guidance on how to integrate these effects into conservation planning. SCS State specialists will train employees in their States using workshop information materials.

FSA responsibilities discussed included status review procedures, wetland inventories, wetland determinations, data sharing with ASCS, the Conservation Reserve Program criteria and maintenance, quality control, and policy on plans requested after the deadline date.

SCS National Technical Centers (NTC) arranged the workshops. The Midwest NTC meeting was in February in Des Moines, Iowa; the West and South NTC meetings

were in March in Portland, Oreg., and Fort Worth, Tex., respectively; and the Northeast NTC meeting was in April in Virginia Beach, Va.

"The regional workshops may have set a precedent on how future related manuals will be presented and put into use," said Reinhardt.

Kim Berry-Brown, contributing editor, *Soil & Water Conservation News*, SCS, Washington, D.C.

Conservation Planning Progresses

Conservation plans have been developed on about 135 million acres of the Nation's approximately 140 million acres of highly erodible cropland.

"We in SCS made a commitment to see that every farmer who wanted a conservation compliance plan got one by the deadline of December 31, 1989," said Soil Conservation Service Chief Wilson Scaling. "Farmers and ranchers themselves have made a strong commitment to soil and water conservation with these plans. In fact, they have already fully implemented plans on 27 percent of the highly erodible cropland."

About 5 million acres of the highly erodible cropland are temporarily exempted from having a plan due to recently completed soil surveys. Remaining acres include land no longer used for cropping or land where the owner has deferred conservation planning at this time.

Scaling encouraged farmers to examine their plans carefully and to be sure they understand what they've agreed to do this year. Each plan contains individual conservation practices and schedules for their installation agreed to by the producer and the local conservation district.

"If farmers have questions, now's the time to call or come in and talk about it at their local SCS offices," Scaling said.

Water Quality Special Projects

The U.S. Department of Agriculture (USDA) will provide $810,000 in accelerated technical assistance by the Soil Conservation Service to farmers in 39 USDA water quality special projects.

The 39 projects are located in 28 States. The goal of the special projects is to assist farmers and ranchers in solving problems caused by agricultural nonpoint source pollution of ground and surface water and to ensure that the public's water supply is protected and improved.

SCS will continue working closely with farmers to help them develop conservation plans to reduce pollution from sources such as pesticides, fertilizers, animal waste, nutrients, and sediment.

The projects will be administered by State and county offices of USDA's Agricultural Stabilization and Conservation Service, with education and technical assistance from the Extension Service and SCS.

Four New RC&D Areas Selected

Southern Alleghenies, Clinch-Powell, Castleland, and Northern Panhandle are new resource conservation and development (RC&D) project areas covering 15.5 million acres in 19 counties in Pennsylvania, Tennessee, Utah, and West Virginia.

The RC&D areas are eligible for Federal assistance. These areas were selected because of the need for assistance and activity of the present local RC&D council. There are nearly 200 RC&D areas nationwide.

The RC&D program, administered by the Soil Conservation Service, was established 25 years ago and works through local RC&D councils and their committees. The program helps RC&D councils set goals and identify local agencies, groups, and foundations to fund and carry out various activities. SCS provides each RC&D area with a project coordinator.

Council members represent sponsoring organizations, including county governments, soil and water conservation districts, towns, water districts, and other nonprofit groups.

The RC&D program has helped improve local water supplies, market local products, and improve needed community facilities, including hospitals, schools, and water and sewage treatment plants. RC&D's have also helped accelerate efforts to control erosion, improve recreation facilities, and provide flood protection.

NEW in Print

Rural Development Issues of the Nineties: Perspectives from the Social Sciences

Edited by Thomas T. Williams, Walter A. Hill, and Ralph D. Christy

This is a collection of papers from the 46th Annual Professional Agricultural Workers Conference Proceedings held in December 1988 at Tuskegee University. They represent a current assessment of the problems and policies affecting rural America. While rural America has undergone significant changes in the past, fundamental to these changes are new problems and challenges that are more complex as the economy shifts toward global markets, as Federal support for rural communities declines, and as deregulation of financial markets places constraints on sources of private sector funding.

The papers focus on the contributions of the land-grant universities, particularly the 1890 institutions, as they embark on a second century of service. Since the establishment of land-grant universities, the problems of rural America have been an important component of the mission of these institutions.

The proceedings are organized in three major parts: Characteristics, Problems and Public Responses: Scope of Rural Development Issues; Institutional and Human Capital Development Issues; and Rural Labor Markets Issues.

A paperback edition of the proceedings is available from the School of Agriculture and Home Economics, George Washington Carver Agricultural Experiment Station, Cooperative Extension Program, Tuskegee University, Tuskegee, AL 36088.

Earth: The Stuff of Life

by Firman E. Bear

This is a revised, second edition of Firman E. Bear's classic treatise on soil, now published in paperback by the University of Oklahoma Press.

Originally published in 1962, the work was revised by H. Wayne Pritchard and Wallace E. Akin in 1986. This edition retains Bear's original analyses of geological transformations, soil chemistry, volcanic activity, climatic changes on the earth, and agricultural activity.

Pritchard and Akin have added new material to the text to reflect their concern about issues such as acid rain, land management, hazardous-waste disposal, and feeding the world.

Agriculture and Human Values commented in a review that few authors could have dealt with the subject of conservation more effectively. "This book is well written, very readable and loaded with useful concepts and information on life in a broad physical and biological context," the review said.

"Earth: The Stuff of Life" should give readers a greater understanding of and appreciation for soil and the importance of sensibly conserving it and the Earth's other renewable natural resources.

The book is available in paperback from The University of Oklahoma Press, 1005 Asp Avenue, Norman, OK 73019. The cost is $14.95.

Handbook of Statistical Methods for Engineers and Scientists

Edited by Harrison M. Wadsworth, Jr.

Explaining exactly how to use important statistical concepts and methods, the *Handbook of Statistical Methods for Engineers and Scientists* is a practical, detailed, and easy-to-use guide to understanding and applying data.

More than 20 authorities in the field have contributed significant material on their areas of expertise. They examine the entire spectrum of statistical methods—from the fundamentals to such advanced topics as nonlinear regression, multivariate procedures, and Taguchi methods.

This reference provides analytical data and methods for a host of specific engineering and scientific disciplines, while including many applications in the field of quality assurance.

Harrison M. Wadsworth, Jr., Ph.D., is a professor at the School of Industrial and Systems Engineering, Georgia Institute of Technology.

This illustrated book is available from McGraw-Hill Publishing Company, 11 West 19th Street, New York, NY 10011. The book can be ordered by calling 1-800-2-MCGRAW. The cost is $76.50.

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Conservation Calendar

May	3-4	USDA/1890 Task Force Meeting, Huntsville, Ala.
	7-13	Public Service Recognition Week, Washington, D.C.
	10-13	American Feed Industry Association Convention, Reno, Nev.
	20-26	8th International Congress on Nitrogen Fixation, Knoxville, Tenn.
	29-June 1	International Conference on Issues in Food Safety & Toxicology, East Lansing, Mich.
June	2-4	World Pork Expo, Des Moines, Iowa
	3-5	National Ag in the Classroom Conference, Washington, D.C.
	6-8	Rice Millers' Association Convention, Orlando, Fla.
	16-19	National Rally, 1990: "Strength through Diversity," The Land Trust Exchange, Villanova, Pa.
	17-20	International Apple Institute Convention, Nashville, Tenn.
	17-20	Grocery Manufacturers of America Convention, White Sulphur Springs, W. Va.
	19-21	Corn Utilization Conference III, St. Louis, Mo.
	24-27	American Society of Agricultural Engineers International Summer Meeting, Columbus, Ohio
	25-29	American Seed Trade Association Convention, Orlando, Fla.
	26-29	History of 1890 Land-Grant Colleges and Universities Centennial Symposium, Tallahassee, Fla.
July	12	Ag Tech '90, Blacksburg, Va.
	14-17	International Agricultural Communicators in Education (ACE) Meeting, Minneapolis-St. Paul, Minn.
	27-30	American Soybean Association Convention, Milwaukee, Wis.
	29-Aug. 1	Soil and Water Conservation Society Annual Meeting, Salt Lake City, Utah